Technical Test Report of the e-Learning Service

D52.4

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Abstract

The FutureID project develops a comprehensive and privacy-friendly identity management infrastructure for Europe, which integrates existing eID technology and trust infrastructures, emerging federated identity management services and modern credential technologies. In order to obtain acceptance by the users, by service providers and by identity providers it is absolutely essential that the whole FutureID infrastructure ensures a high trust level for its services. This requires a comprehensive security concept for the communication between FutureID components and with external entities and for the handling of user data.

One key outcome of the FutureID projects is the use of the FutureID eco-system in the two demonstrations. WP51 shows a demonstration along the eHealth services in the public sector along the epSOS ICT large scale pilot from the EU Commission and WP52 shows a demonstration along the e-Learning Service from Atos, which deals as a citizen service in the private sector.

WP52 is based on six pillars, with Atos e-Learning Services for Enterprises integration and Requirements Analysis – output is D52.1, Concept for e-Learning Services for Enterprises Infrastructure – output is D52.2, Implementation of e-Learning Services for Enterprises Infrastructure – output is D52.3, Identification and Integration of Services – output is D52.3, Testing – output is D52.4 and Legal support – output is D52.6.

D52.4 displays all relevant tests of the integration from Future-ID with the Atos e-Learning Services for Enterprises as a proof-of-concept. This report demonstrates the viability of FutureID components in business scenarios, specifically with regards to Internet of Services. Chapter 6 describe the project, chapter 7 the testing approaches, chapter 8 the testing scenarios, chapter 9 testing methodology, chapter 10 the testing environment, chapter 11 the test cases and chapter 12 address the conclusion of D52.4.

1 Executive Summary

This deliverable describes the performance of operational tests in order to validate the solution integrating of the e-Learning Services for Enterprises platform with the FutureID backend framework. It is part of the overall demonstration activities. It's provides a proof-of-concept of the viability of FutureID components in the business scenario of e-learning, provided from Atos, specifically with regards to Internet of Services and to Cloud scenarios. This deliverable is part of five deliverables along this service marketplace.

This deliverable is the fourth milestone along the pilot demonstration. The first milestone shows the integration and requirement analysis (D52.1), the second milestone the concept for the infrastructure (D52.2), and the third milestone the used enterprise infrastructure (D52.3).

In section 7 all relevant basic aspects which were used were described, such as installation testing, end-to-end test environment, service level agreement monitoring, operation test environment, portability test, security test and usability test.

Section 8 describes the used test scenarios based on two options on authentication with user password and via FutureID infrastructure. The selected scenarios address all relevant cases, such as user is registered or user is not registered, user cancels the log-in procedure, user cancels the registration procedure and many others.

The used testing methodology is described in section 9 and the used testing environment in section 10.

A broad range of test cases were reflected in section 11. All the test cases have been successfully passed.

FutureID infrastructure is fully usable for the authentication of users in the business scenario such as e-Learning from Atos. This shows an example for internet services and cloud scenario in the enterprise domain.

In respect to the 2nd pilot along the epSOS e-health application, the structure of this document (D52.4) is synchronized with the structure of D51.4.

2 Document Information

2.1 Contributors

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2.2 History

Version	Date	Author	Changes
0.1	20/10/2015	Detlef Houdeau	Initial document
0.2	21/10/2015	Juan Carlos Pérez Baún	1st draft for the structure of the report
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0.4	03/11/2015	Detlef Houdeau	Overwork based on the review cycle feedback; final version

2.3 Table of Figures

2.4 Table of Tables

2.5 Table of Acronyms

AB	**A**uthentication **B**ackend
AF	**A**ccess **F**ilter
AICC	**A**viation **I**ndustry **C**BT [Computer-Based Training] **C**ommittee
AIS	**A**pplication **I**ntegration **S**ervice (a relying party implementation)
AJAX	**A**synchronous **J**avaScript **A**nd **X**ML
BC	**B**roker **C**ore
Belpic	**Bel**gium **P**ersonal **I**dentity **C**ard
BS	**B**roker **S**ervice
BSD	**B**erkeley **S**oftware **D**istribution
CAPTCHA	**C**ompletely **A**utomated **P**ublic to tell **C**omputers and **H**umans **A**part
CSS	**C**ascading **S**tyle **S**heets
CTDB	**C**redential **T**ransaction **D**ata **B**ase
CV	**C**redential **V**erifier
DB	**D**ata **B**ase
DHTML	**D**ynamic **HTML**

DOM	**D**ocument **O**bject **M**odel
eCard	**e**lectronic ID **Card** in Austria
EEA	**E**uropean **E**conomic **A**rea
epSOS	**E**uropean **P**atients **S**mart **O**pen **S**ervices
FC	**F**utureID **C**lient
HTML	**H**yper**T**ext **M**arkup **L**anguage
HTTP	**H**yper**T**ext **T**ransfer **P**rotocol
IdP	**I**dentity **P**rovider
LIS	**L**egacy **I**ntegration **S**ervice
LMS	**L**earning **M**anagement **S**ystem
MOOC	**M**assive **O**pen **O**nline **C**ourse
MySQL	**My S**tructured **Q**uery **L**anguage
nPA	**n**euer **P**ersonal**a**usweis (new eID Card in Germany)
PEPS	**P**an **E**uropean **P**roxy **S**erver
PHP	**H**ypertext **P**reprocessor
QA	**Q**uality **A**ssurance
RSS	**R**eally **S**imple **S**yndication
SaaS	**S**oftware **a**s **a** **S**ervice
SAML	**S**ecurity **A**ssertion **M**arkup **L**anguage
SCORM	**S**harable **C**ontent **O**bject **R**eference **M**odel
SCT	**S**imple **C**redential **T**ransformer
SSL	**S**ecure **S**ockets **L**ayer
SSO	**S**ingle **S**ign **O**n
STORK	**S**ecure iden**T**ity acr**O**ss bo**R**ders lin**K**ed

TLS	**T**ransport **L**ayer **S**ecurity
UI	**U**ser **I**nterface
VM	**V**irtual **M**achine
WYSIWYG	**W**hat **Y**ou **S**ee **I**s **W**hat **Y**ou **G**et
XML	e**X**tensible **M**arkup **L**anguage
YUI	**Y**ahoo **U**ser **I**nterface

2.6 Referenced Documents

[1] - FutureID_D52 01_WP52_v1.0_Requirements for FutureID components in Business Scenarios_Final, https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=3858403

[2] - FutureID_D52.02_WP52_v0.5_Technical Specification including Description of IdP SP and Identity Token Formats, https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=4470073

[3] - FutureID_D52.03_WP52_v1.0_Proof-of-Concept Implementation of a Hosted Service for the FutureID Framework, https://dms-prext.fraunhofer.de/livelink/livelink.exe/overview/6128813

[4] - FutureID_D21.04_WP21_v1.1_Reference_Architecture, https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=3841750

[5] - FutureID_D44.03_WP44_v1.1_Technical_Specifications_for_AIS,, https://dms-prext.fraunhofer.de/livelink/livelink.exe/overview/4103780

[6] – FutureID_D21.5_WP21_Analysis of relevant Business and Use Case, https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=3522498

[7] – EC Review Period 1 Outline WP52, https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=3574067

[8] - Login Spanish eID card: https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=6472177

[9] - Login Spanish Software certificate: https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=6472839

[10] - FutureID Team Certificate: https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=3792309

[11] – STORK Software: https://www.eid-stork.eu/index.php?option=com_processes&act=list_documents&s=1&Itemid=60&id=312

[12] - Login AtoseLearning.avi:]https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=6487411

[13] - Registration AtoseLearning.avi, https://dms-prext.fraunhofer.de/livelink/livelink.exe?func=ll&objaction=overview&objid=6489050

3 Table of Contents

4 Project Description

The *FutureID* project builds a comprehensive, flexible, privacy-aware and ubiquitously usable identity management infrastructure for Europe, which integrates existing eID technology and trust infrastructures, emerging federated identity management services and modern credential technologies to provide a user-centric system for the trustworthy and accountable management of identity claims.

The *FutureID* infrastructure will provide great benefits to all stakeholders involved in the eID value chain. Users will benefit from the availability of a ubiquitously usable open source eID client that is capable of running on arbitrary desktop PCs, tablets and modern smart phones. *FutureID* will allow application and service providers to easily integrate their existing services with the *FutureID* infrastructure, providing them with the benefits from the strong security offered by eIDs without requiring them to make substantial investments.

This will enable service providers to offer this technology to users as an alternative to username/password based systems, providing them with a choice for a more trustworthy, usable and innovative technology. For existing and emerging trust service providers and card issuers *FutureID* will provide an integrative framework, which eases using their authentication and signature related products across Europe and beyond.

To demonstrate the applicability of the developed technologies and the feasibility of the overall approach *FutureID* will develop two pilot applications and is open for additional application services who want to use the innovative *FutureID* technology

Future ID is a three-year duration project funded by the European Commission Seventh Framework Programme (FP7/2007-2013) under grant agreement no. 318424

5 Introduction

Report D52.4 describes all relevant technical tests of a hosted service such as Atos e-Learning platform for the FutureID framework. The test phase can take place, after the integration and requirement analysis was performed in D52.1. The concept for the infrastructure was created in D52.2 and the implementation of enterprise infrastructure was executed in D52.3.

The testing approach addresses the following aspects:

- Basic aspects of the test
- Testing scenarios
- Testing methodology
- Testing environment and
- Testing cases.

The basic aspects pertains to the installation testing, end-to-end test environment, operational testing, service level agreement monitoring test, load and performance test operation, portability test, security test and usability test.

The test environment that has been used is based on the implemented Apache specific AIS, as described in D52.3

All defined test elements would be explained in detail along a description block and how it would be tested.

A broad range of test cases should show the availability, workability and stability of the e-Learning service in the enterprise domain.

All tests would be done at the facility and along the existing data base of Atos in combination with the FutureID infrastructure.

Beside this report also a video was created, to show how it works.

6 Atos e-Learning Services for Enterprise Pilot

6.1 Overview

The main objective of the Atos e-Learning platform is to offer customers of an enterprise a reliable e-Learning enterprise solution, which will lower the training costs for the organizations, provide a faster delivery and a more effective learning for e-Learning users (organization employees and outside organization clients) [6].

Atos e-Learning Services for Enterprises (e-Learning Marketplace Platform) was chosen as a valid test case to demonstrate the viability of FutureID components in business scenarios, specifically with regards to the Internet of Services [7]. Both organization employees and clients subscribed to the e-Learning courses will have an access to the e-Learning services through Future-ID which provides a strong authentication service enhancing the security level.

Atos e-Learning Services for Enterprises offers to users several services such as courses adapted to business needs, e-Learning forums, e-Learning chats, resources or news among other.

In order to provide to users the aforementioned services Atos e-Learning platform uses several technologies such as PHP, the Yahoo User Interface a JavaScript library, the TinyMCE HTML editor and MySQL as data base [3].

6.2 Atos e-Learning Services for Enterprises Pilot

The e-Learning Services for Enterprises pilot is based on three pillars, the Atos e-Learning platform as a service provider for citizens, the FutureID eco-system ensuring a high trust level for its services, a high level of security for the communication between FutureID components and with external entities and for the handling of user data, and finally the STORK platform which is acting as a cross-border Identity Provider connected to FutureID infrastructure through the FutureID backend framework.

The reference architecture of these three pillars are outlined next with the aim of have a general picture of the main components for each infrastructure. Then we will show how these infrastructures are working together.

Atos e-Learning Platform follows the typical three-tier architecture [2] as Figure 1 shows.

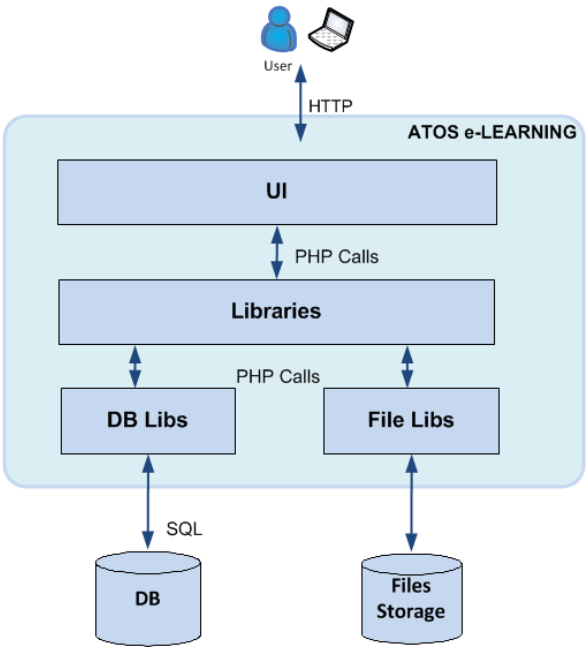

Figure 1: Atos e-Learning Platform 3 layer architecture.

Figure 2 depicts the overview of the FutureID platform reference architecture [4].

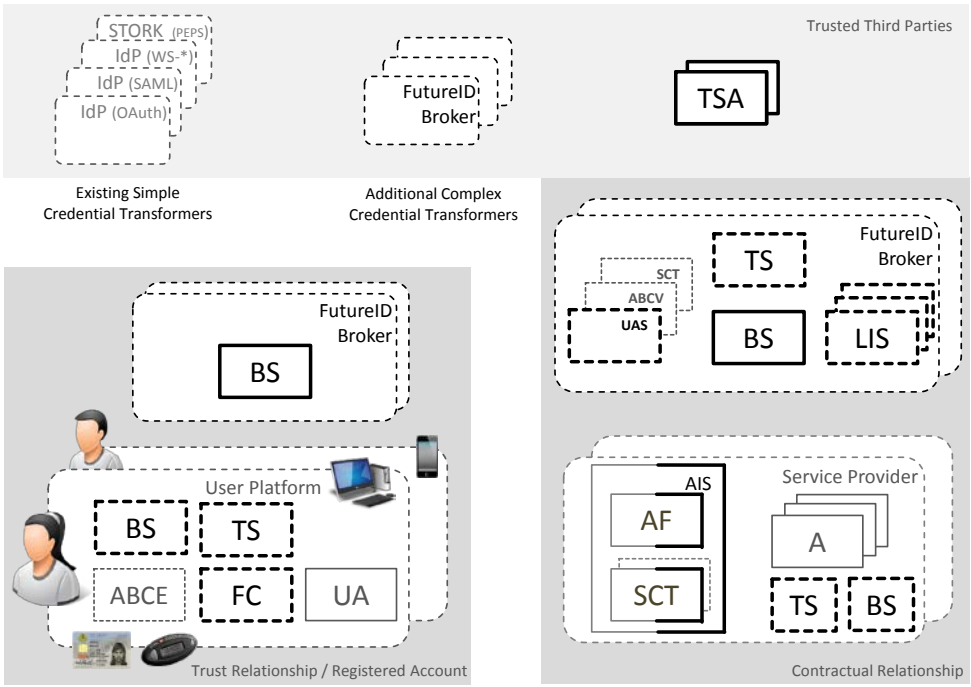

Figure 2: FutureID architectural components.

And finally the the communication structure of STORK is shown in Figure 3 [4].

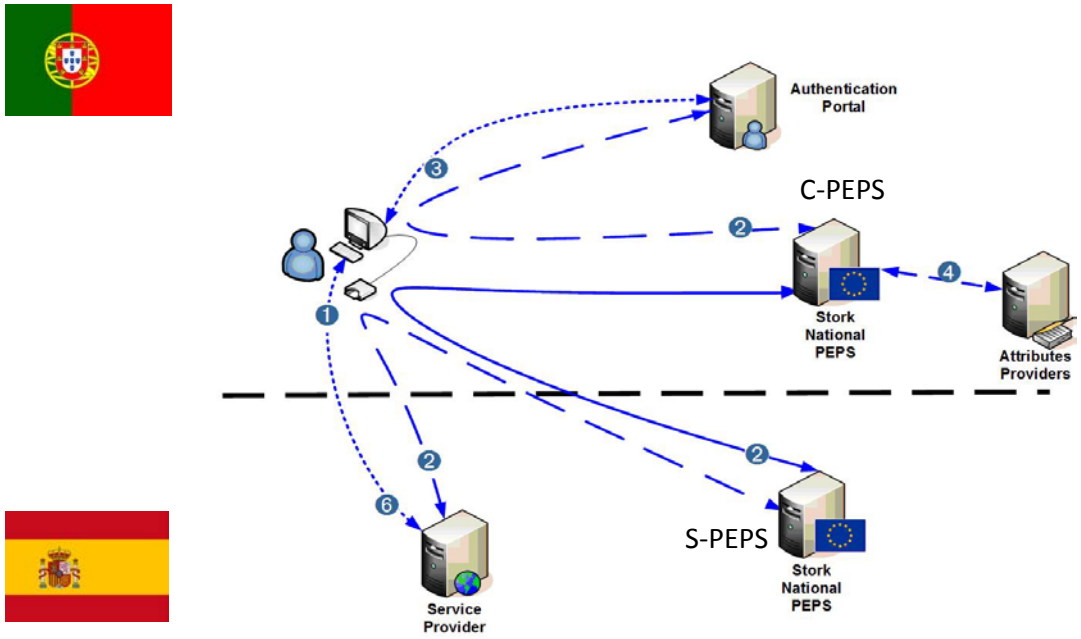

Figure 3: STORK Communication Structure.

Figure 4 depicts an overall view of Atos e-Learning Platform integration into FutureID infrastructure and the interaction with the STORK platform.

The FutureID infrastructure will provide new authentication mechanisms to the users that wish to use Atos e-Learning services for employees in enterprises.

FutureID enables the option of more authentication mechanisms (through the connection with more IdPs), in the case of Atos e-learning services for enterprises pilot the STORK infrastructure will be used for authentication purposes.

The AIS is the component that communicates with both the FutureID infrastructure and the Atos e-Learning platform. The Atos e-Learning pilot use the Apache AIS implementation to communicate with Future ID components using SAML 2.0 protocols to exchange messages, and in order to improve the security level, the TLS/SSL communication protocol will be used.

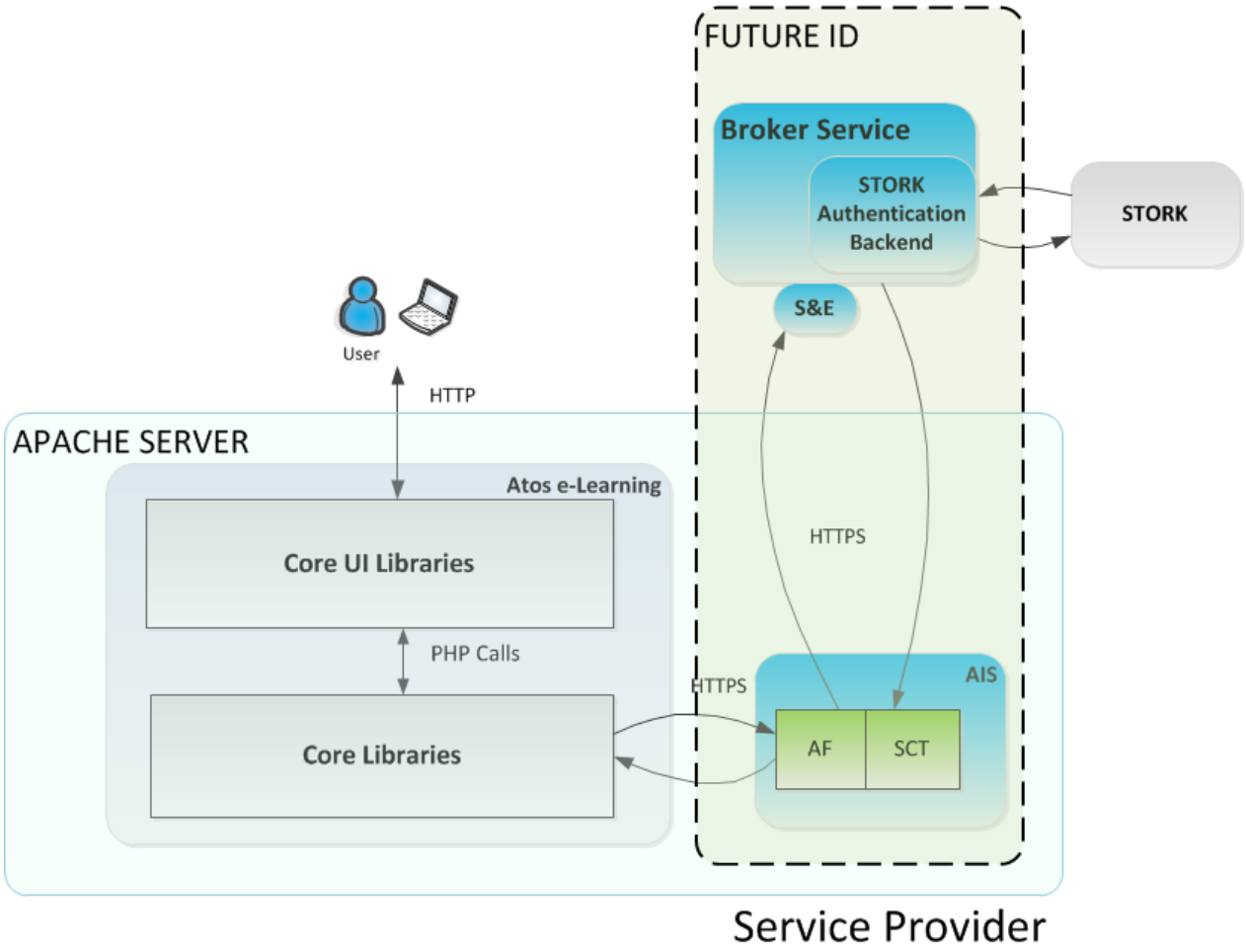

Figure 4: Atos e-Learning integration into FutureID overview.

7 Testing approach

The integration of Atos e-Learning platform into the FutureID platform aims at two objectives:

- Provide to SP and users a strong authentication environment through the use of STORK platform granting the user the access to educational services;
- Filtering the access to educational resources provided by Atos requested by users.

This is made through the implementation of a specific Application Integration Service, the Apache AIS implementation which is running on Apache server. The FutureID Apache AIS component will be the connection with the FutureID eco-system as Figure 4 shows.

7.1 Documentation review

A description for installation and deployment of the Application Integration Service needed for integration of Atos e-Learning platform into the FutureID platform has been developed in section 10 of previous deliverable FutureID_D52.3_WP52_v1.0_Proof-of-Concept Implementation of a Hosted Service for the FutureID Framework [3]. In order to facilitate the testing process and the evaluation for the pilot two videos describing the authentication process that has been created, one for the authentication using Spanish software certificates [8] and another one showing how the Spanish eID card is used for the authentication process [9].

7.2 Installation Testing

Next table summarizes the Virtual Machines (VM) features where the pilot is running and where the Apache AIS has been developed and deployed:

Feature	**Value**
SO	Ubuntu 14.04.3 LTS 64 bits
Processors	2 virtual processors: equivalent to Intel Xeon 2.9Ghz
RAM	4Gb
Hard Disk	16Gb Hard Disk (13 Gb free)

Table 1 – VM main features

Next table shows the VM technical features:

Feature	Value
vendor_id	GenuineIntel
cpu family	6
model	45
model name	Intel(R) Xeon(R) CPU E5-2667 0 @ 2.90GHz
stepping	7
microcode	0x70d
cpu MHz	2900.032
cache size	15360 KB
physical id	0
siblings	1
core id	0
cpu cores	1
apicid	0
initial apicid	0
fpu	yes
fpu_exception	yes
cpuid level	13
wp	yes
flags	fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx rdtscp lm constant_tsc rep_good nopl pni pclmulqdq ssse3 cx16 pcid sse4_1 sse4_2 x2apic popcnt tsc_deadline_timer aes hypervisor lahf_lm
bogomips	5800.06
clflush size	64

cache_alignment	64
address sizes	46 bits physical, 48 bits virtual

Table 2 – VM details

As indicated in section 7.1 before the AIS component will be deployed the following prerequisites must be fulfilled:

- Installation of Apache 2.4;
- Installation of mod-python in Apache;
- Installation of Python modules “Requests” (for requesting information) and “OneLogin” libraries for SAML;
- Enabling the following Apache Modules: python, SSL and headers.

Testing approach	**Installation Testing**
Description	During the installation and deployment of the Atos e-Learning platform and Apache AIS, the processes have been monitoring for deploying and installation errors through the log files.
Classification on Pilot	MUST
How has it been tested?	Manually
Result	Passed

7.3 End-to-End Test Environment Operational Testing

The purpose of this end-to –end testing is verify that the integrated FutureID components (AIS, BS, STORK authentication backend) work correctly as part of the Atos e-Learning pilot, and that the existing components of the Atos e-Learning platform work as before.

Testing approach	**End-to-End Test Environment Operational Testing**
Description	After the integration of the different FutureID components with the Atos e-Learning platform both the FutureID components namely AIS, BS, STORK Backend, and the several components of Atos e-Learning platform, namely the non-

	protected resources, the protected resources, the data base are working properly as did before.
Classification on Pilot	MUST
How has it been tested?	Both the whole login process to get access to the Atos e-Learning resources and the registration process for a new user in Atos e-Learning platform has been performed using eID-cards.
Result	Passed

7.4 Service Level Agreement Monitoring Test

The FutureID components used for the Atos e-Learning pilot has been developed by different partners and has been deployed in different premises e.g. BS is deployed in ECSEC servers, and AIS and STORK authentication backend are deployed on Atos premises. Additionally the Atos e-Learning platform is developed and running on Atos servers.

With the objective to run the Atos e-Learning pilot smoothly the partners involved ECSEC and Atos have agreed to fix the bugs arisen and support the other partner when needed during the pilot integration.

Testing approach	**Service Level Agreement Monitoring Test**
Description	ECSEC and Atos have agreed to support each other with the aim to smoothly run the integration process.
Classification on Pilot	MUST
How has it been tested?	During the integration of the different FutureID components with Atos e-Learning platform both partners have been exchange emails in order to support one each other with bugs and changes.
Result	Passed

7.5 Load and Performance Test Operation

As the aim of this pilot is provide a proof-of-concept that demonstrates the viability of FutureID components in business scenarios, specifically with respect to Internet of Services, and the

environment where it was tested is not a pre-production or a production environment. The objective of this section was not to run a load and performance test of the service but to illustrate that the pilot is running on the servers in a smoothly and stable way.

Testing approach	**Load and Performance Test Operation**
Description	The deployed environment runs during the test phase of the Atos e-Learning platform in a stable way.
Classification on Pilot	SHOULD
How has it been tested?	No connection refused or server down messages has been reported during the testing phase.
Result	Passed

7.6 Portability Test

In order to install the complete infrastructure including the Apache server container, the AIS component and the Atos e-Learning platform an installation package containing the following package has been created [3]:

- AIS_html package containing html files;
- AIS_py package containing mainly the python files;
- 000-default.conf configuration apache file that will be used as configuration model;
- Atos e-Learning platform including the PHP libraries, MySQL installation package and the data base scripts for the initial data completion.

Testing approach	**Portability Test**
Description	The Atos e-Learning pilot should be portable and provide the needed components for installation and deployment.
Classification on Pilot	SHOULD
How has it been tested?	The packages for installation and deployment has been created
Result	Passed

7.7 Security Testing

The communications between Atos e-Learning platform and FutureID components and between each FutureID components and third parties (STORK platform) must be secure in order to provide a high level of trust. With this aim to improve the security level of communication a TLS/SSL protocol will be used. Also, Atos e-Learning platform will communicate with Future ID components through Apache AIS using SAML 2.0 Web Browser SSO profile and HTTP Redirect binding or HTTP Post binding. The AIS component was developed in this manner. It was created to provide authentication using SAML assertions.

Testing approach	**Security Testing**
Description	Atos e-Learning platform will communicate with Future ID components through Apache AIS using SAML 2.0 protocol and the communications will be stablished through a TLS/SSL protocol
Classification on Pilot	MUST
How has it been tested?	GET access has been tested and rejected. Https connections have been used for all the testing process and only valid SAML Request and SAMLResponse have been accepted.
Result	Passed

7.8 Usability Test

This non-functional testing is a measure based on next basic parameters:

- Level of Skill required to use the pilot;
- Time required to get used to in using the different components of the pilot;
- Information (about privacy, attributes disclosure, steps to proceed, etc.) provided to the users by the pilot components.

Testing approach	**Usability Testing**
Description	The different components of the pilot will provide enough information about privacy, attributes requested and to

	disclose, steps to proceed with the authentication process, and must guarantee that the procedure to authenticate to is easy to follow and easy to use.
Classification on Pilot	MUST
How has it been tested?	Graphic user interface has been tested and checked that the relevant information about privacy, attributes to requested and disclosure by different parties is informed to the user. Also the steps to proceed with login and registration are clearly informed to the user.
Result	Passed

8 Testing scenarios

The Atos e-Learning platform as an educational service provider for organization employees and citizens must verify the identity of the users accessing the resources provided.

In this way the Atos e-Learning platform offers the possibility to authenticate the users through FutureID platform. Only the users already registered in Atos e-Learning have access to the resources provided. An administrator is in charge of managing the registration process. Additionally Atos e-Learning allows users to register themselves through FutureID. Once the user asks for registration the Atos e-Learning administrator includes the data provided by the user into the system.

When an already registered user tries to get access to the platform, Atos e-Learning offers two options of authentication:

- Usual user/password:
- Authentication through FutureID.

If the user chooses FutureID as authentication method, the FutureID platform offers the user to authenticate using different options based on STORK platform, and asks for permission on requesting attributes (e-Identifier) for grant access.

For those users not registered Atos e-Learning provides the opportunity to register using the FutureID platform as well. The process is similar than the authentication process but in this case the attributes the Atos e-Learning needs for the registration process is increased (e-Identifier, name and surname) and confirmed with the software certificate.

Different scenarios arise for testing purposes:

- User already registered and no logged-in;
- User already registered and already logged-in;
- User non registered;
- User cancels his (her) log-in process at any moment;
- User cancels his (her) registration process at any moment;
- The authentication process fails at any moment.

Each of these different possibilities has to be tested against all the components involved in the process. Thus, we define a set of six specific test cases for the Atos e-Learning pilot.

9 Testing methodology

The Atos e-Learning platform integrated into the FutureID platform is based on web-based services. Also, as Atos e-Learning pilot combines multiple FutureID components, the testing methodology for evaluation the functionalities and processes has been developed based on a system testing. It means testing the pilot as a whole within an end-to-end process.

Following this approach, all functionalities of the Atos e-Learning pilot can be tested and validated for operational reliability and correctness. For this purpose previous section 8 has detected six different scenarios to be tested.

10 Testing environment

The test server is running Ubuntu 14.04.3 LTS and Apache/2.4.7 (Ubuntu). The Atos e-Learning platform is using PHP 5.5.9-1ubuntu4.11 (cli) and MySQL Ver 14.14 Distrib 5.5.44.

The credentials used for testing purposes comprise:

- FutureID Software certificate provided by ECSEC [10];
- Spanish software certificates provided by Stork [11];
- Spanish eID-card provided by the Atos team.

Additionally for the connection between FutureID infrastructure and STORK the STORK Authentication backend component is used. This component is also deployed on the same test server on Tomcat Version: 7.0.52-1.

11 Testing cases

When a citizen wish to access the Atos e-Learning platform the authentication process would be as follows [4]

1. Consider a citizen from Europe that wishes to gain access to Atos e-Learning services for enterprises offered in Spain. The person will click login and is offered the possibilities:
    a. New user for Atos e-learning (Register):
        1. Local register;
        2. Register using FutureID;
    b. Local login;
    c. Login as a guest;
    d. Login with FutureID.

    The cases which requires authentication with FutureID are a.2 and d.

2. For the mentioned cases which requires authentication, for those that FutureID option has been selected, the service responds with a FutureID authentication request that states the authentication requirements and the trusted IdP alternatives to authenticate with.
3. The user selects the IdP (STORK) with which he wishes to be authenticated. Depending on the IdP chosen the user selects the credentials to make available and decides which optional attributes shall be disclosed.

The user sends the selected credentials and the attributes chosen to request the authentication in the selected IdP and obtains access to the Atos e-Learning portal. When STORK is used as IdP for this specific case, the authentication request would reach to the citizen origin country STORK-PEPS, responsible for authenticate the citizen.

In order to show how the authentication process is developed, some video captures have been recorded and are available on repository for both processes, authentication for login [12] and authentication for registration [13]. There could be also a video showing the case when an unregistered user is trying to log into the system. The eID Card in Spain is also usable for this.

The six different scenarios outlined in section 8 have been tested as follows:

- User already registered and no logged-in;
- User already registered and already logged-in;
- User non registered;
- User cancels his (her) log-in process at any moment;
- User cancels his (her) registration process at any moment;
- The authentication process fails at any moment.

11.1 Registered user not logged-in

Testing cases	**Register user: Not logged-in**
Description	An already registered user tries to get access to the Atos e-Learning platform providing Spanish eID-card as credential.
Classification on Pilot	MUST
How has it been tested?	The user clicks on the FutureID login button. The system redirects the user to the BS. The BS asks the user to choose among different authentication options. The user selects to authenticate to through STORK using the Spanish eID-card. The BS shows the attributes requested by the service provider to be authenticated. The user accepts the attributes requested and clicks on send button. The BS redirects the user to the STORK authentication backend. The STORK authentication backend redirects the user to the STORK entry point (Spanish PEPS). The user is redirected to Spanish Identity Provider. The IdP asks the user for credentials. The user inserts her Spanish eID-card. The user enters the PIN and checks the attributes to be disclosure. The user clicks on the send button and the attributes reach the STORK AB, and then the BS. The user is redirected to the BS. Then the BS sends a SAMLResponse to the AIS component which validates the response and grants the user access to the requested resource.
Result	Passed

11.2 Registered user already logged-in

Testing cases	**Register user: Logged-in user**
Description	An already registered and also logged-in tries to get access to the Atos e-Learning platform.
Classification on Pilot	MUST
How has it been tested?	An already registered and also logged-in user closes the browser tab where the Atos e-Learning resource was displayed. If the user tries again to get access to the Atos e-Learning platform the system check if this user session is still valid and if it is right grants the user access to the requested resource.
Result	Passed

11.3 Non registered user

Testing cases	**Registration process**
Description	A non-registered user tries to get access to a resource provided by the Atos e-Learning platform.
Classification on Pilot	MUST
How has it been tested?	The non-registered user tries to get access to a resource provided by the Atos e-Learning platform. The system refuses to give access and redirects the user to the login/registration page. The user clicks on the FutureID Register button. The system redirects the user to the BS. The BS asks the user to choose among different authentication options for registration process. The user selects to authenticate to through STORK using the Spanish eID-card. The BS shows the attributes requested by the service provider to be registered. The user accepts the attributes requested and clicks on send button. The BS redirects the user to the STORK authentication backend. The STORK authentication backend redirects the user to the STORK entry point (Spanish PEPS). The user is redirected to Spanish Identity Provider. The IdP asks the user for credentials. The user inserts her Spanish eID-card. The user enters the PIN and checks the attributes to be disclosure for registration purposes. The user clicks on the send button and the attributes reach the STORK AB, and then the BS. The user is redirected to the BS. Then the BS sends a SAMLResponse to the AIS component which validates the response and sends the user data to the Atos e-Learning platform. A message indicating that the registration was successful is displayed. The user will get in contact with the administrators site to get access to the platform.
Result	Passed

11.4 User cancel the login process

Testing cases	**Cancel login process**
Description	During the authentication process for login the user cancels the process.

Classification on Pilot	MUST
How has it been tested?	Once the user has clicked on FutureID Login button the user makes the choice to cancel the process either on the BS or on the STORK authentication backend. In both cases the user is redirected to the original page.
Result	Passed

11.5 User cancel the registration process

Testing cases	**Cancel registration process**
Description	During the authentication process for registration the user cancels the process.
Classification on Pilot	MUST
How has it been tested?	Once the user has clicked on FutureID Register button the user make the choice to cancel the process either on the BS or on the STORK authentication backend. In both cases the user is redirected to the original page.
Result	Passed

11.6 Authentication error management

Testing cases	**Error management**
Description	During the authentication process for either login or registration a system error arise during the process.
Classification on Pilot	MUST
How has it been tested?	If due to technical reasons the authentication process fails the user should be informed in a friendly way.
Result	Passed

12 Conclusion

The focus of the Atos e-Learning platform is to offer enterprise customers a reliable e-Learning enterprise solution, which will lower the training costs for the organizations and provide a faster delivery and more effective learning for e-Learning users - organized employees and outside organized clients.

Based on many basic aspects, various test scenarios, specific test methodology and testing environment, a broad range of test cases were deeply described. All defined tests were successful passed.

This test report reflects the availability, applicability and stability of the FutureID components in this business scenarios, specifically with regards to internet services and cloud scenarios.